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Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## International Journal of Vegetable Science

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title-content=t792306876>

### Biofuel

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Online Publication Date: 20 March 2008

To cite this Article Russo, Vincent M.(2008)'Biofuel',International Journal of Vegetable Science,14:1,1 — 3

To link to this Article: DOI: 10.1080/19315260801888512

URL: <http://dx.doi.org/10.1080/19315260801888512>

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## *THE EDITOR'S FIELD*

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### Biofuel

“Yes they do!” normally responded to by “No they don’t!” comments associated with the debate on whether it takes more energy to produce biofuels than is recovered. A corollary goes something like: “Yes they do!” normally responded to by “No they don’t!” and these folks are expressing their opinion of whether there is sufficient land to produce crops needed to produce biofuels. The sky is falling, or it isn’t, make your choice, and buy the stocks that you think are going to provide the most return to your retirement fund.

We are used to fossil fuels. We have lived with internal combustion engines for a century. People have been born and died in that time frame. Our individual concept of time does not span that time frame. It is hard to change from something known to something new. Questions arise: Is it better? Will it work? Will it affect my lifestyle? Petroleum does not grow on trees. It did at one time and also in the bodies of uncountable animals. There is still a bunch of it around, but as far as easily retrieving it, those days are pretty much gone. Even if the site is not in the Arctic, or off a continent, it is still necessary to construct a drill platform, get a bunch of people on the site, and sink a hole through hundreds to thousands of feet of soil and rock. After the source has been reached, its flow still has to be controlled and connected to the infrastructure to deliver it to the refineries where it is transformed, and then sent through more infrastructure to buyers and sellers until it ends up in the gas tank of a car or in the holding tank of a house where it is burned for fuel. It is not a simple process, nor is

International Journal of Vegetable Science, Vol. 14(1) 2008

Available online at <http://ijvs.haworthpress.com>

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doi:10.1080/19315260801888512

it cheap. Acceptance of use of a product that is inherently dangerous, i.e., flammable, explosive, or poisonous, did not occur overnight. There was a necessary period of time in which people had to become accepting of how this fuel was going to be used in their lives and how it would change the way people looked at their daily life. During this process there were laws passed in some locations that mandated that engine-powered vehicles had to slow down, or otherwise be controlled, so that horses would not be spooked.

Petroleum-based products have one thing going for them. We know where they come from. It is that black stuff that comes out of wells driven in the ground. It all has pretty much the same origin, crushed animal and plant material that has given up and transformed the carbohydrates that we burn. I guess that it does grow on trees; it is just that it will take millions of years and tons of pressure to get it to the gas tank. How many vehicles do you think you will go through by then? In addition to acceptance of use of petroleum-based fuels, the infrastructure to deliver the fuel had to be not only developed but invented. This also did not happen overnight. Also, methods to make secure, as much as possible, the land and people over, or under, which the raw products and the finished fuels are transported had to be developed and then at some point codified. This aim of security has only in part been achieved; occasionally there will be a fire, a spill, or an explosion at a plant or involving ground transport. In addition, all it takes is a storm in the wrong place and sourcing, delivery, and refining of products is disrupted.

So what does this have to do with biofuels in general and vegetables specifically? The understanding of how to get a combustible material from plants is not new. Individuals, companies, and governments have applied resources to develop a better understanding of how this can be accomplished, and at what cost, for almost as long as there have been internal combustion engines. New interest, global realities, a renewed responsibility of what it means to be a citizen of the planet, and a fair amount of money has directed—no focused, like a laser—activities on making biofuels an important part of getting from place to place during the day. I know slightly sarcastic; I am for the reduction in dependence on fossil fuels.

A major truth about the conversion to biofuels is that it will take time and require change. What should also be understood is that there is not, nor should there be, a single source of plant-originated biofuels. This is the opposite for petroleum-based materials. Plants are at the mercy of the environment. All it takes is a storm in the wrong place and sourcing,

delivery, and refining of products is disrupted. That sounds familiar. Also, disease and insects can destroy a crop. Not all potential biofuel crops can tolerate the same growing conditions. Actually, this is a good thing. It means that the chances of a particular insect, disease, or storm severely disrupting the flow of fuel will be minimized.

Oh, yeah, vegetables. Vegetable oils have been recognized as a particularly good source of material that can be burned. *Brassica* seed provides oils that are used to cook foods, and they can be used to fuel the cooking of food. Sweet corn, not so much for the ear, but the biomass can likely be planted several times in a season to obtain the carbohydrates that can be burned.

There will be changes that will have to be made, challenges overcome, and opportunities recognized and capitalized on. So what? Let us stop trying to punch holes in the other person's theories and work together to address this very important problem that faces the whole planet. As a species we are cantankerous, egotistical, and self-centered, but also inventive and innovative. Consider what positive things have been done over the last 100 years. We can meet these challenges—no, we can overcome these challenges.

### **REVIEWERS OF SUBMITTED MANUSCRIPTS**

In addition to the editorial consulting board, I want to extend my gratitude to the voluntary reviewers who provide their time and efforts to assure that the quality of the manuscripts meets the standards expected by the journal and its readers. They are J. Adelberg, A. Alsadon, A. Barker, E. Carey, A. Casas-Diaz, B. Grube, M. Hutton, V. Jeliakov, and C. Jones.

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